

What Is Claimed Is:

1. A vaccine, comprising a mesenchymal stem cell that expresses at least one co-stimulatory molecule, and has been modified to have at least one exogenous antigen fragment bound to a member selected from the group consisting of MHC II, MHC I, and CD1 such that
10 said at least one antigen is presented to initiate an immune response.

2. The vaccine of claim 1 wherein said member is MHC II.

3. The vaccine of claim 2 wherein the co-stimulatory molecule is selected from the group consisting of B7-1 and B7-2.

4. The vaccine of claim 2 wherein the exogenous antigen is selected from the group
15 consisting of a protein, a polypeptide, a glycolipid and a lipid.

5. The vaccine of claim 2 wherein the mesenchymal stem cell was modified by contact with the exogenous antigen, fragment or an antigen including said fragment.

6. The vaccine of claim 2 wherein the mesenchymal stem cell contains exogenous genetic material that codes for the exogenous antigen fragment or an antigen including said
20 fragment.

7. The vaccine of claim 6 wherein the exogenous genetic material is in an expression vector.

8. The vaccine of claim 2 wherein the mesenchymal stem cell contains exogenous genetic material that codes for the co-stimulatory molecule.

25 9. The vaccine of claim 8 wherein the exogenous genetic material is in an expression vector.

10. The vaccine of claim 2 which contains exogenous genetic material that codes for interferon- γ .

11. A vaccine, comprising a cell of the adipocyte lineage that expresses at least one co-

stimulatory molecule and has been modified to have at least one exogenous antigen fragment bound to a primary surface molecule of said cell such that said at least one antigen is presented to initiate an immune response.

5 12. A method of producing a vaccine comprising:
modifying a mesenchymal stem cell to express a co-stimulatory molecule and to present at least one exogenous antigen fragment bound to a primary surface of the cell.

10 13. The method of claim 12 wherein the mesenchymal stem cell is modified to present an antigen fragment by contacting the mesenchymal stem cell with at least one of the antigen fragment or an antigen that includes said fragment.

14. The method of claim 12 wherein the mesenchymal stem cell is modified by providing the mesenchymal stem cell with genetic material that expresses at least one of the antigen fragment or an antigen including said antigen fragment.

15 15. The method of claim 12 wherein the mesenchymal stem cell is induced to differentiate into cells of the adipocyte lineage that express the co-stimulation molecule and present the antigen fragment.

20 16. A method for inducing an antigen specific T-cell response in an animal comprising: administering to the animal an effective amount of mesenchymal stem cells or cells of the adipocyte lineage that (i) have been modified to include at least one exogenous antigen fragment bound to a primary surface molecule of said cells, said cells also expressing at least one co-stimulatory molecule, said cells inducing a T-cell response against an antigen including said at least one fragment.

17. The method of Claim 16 wherein the cells are mesenchymal stem cells.

18. The method of Claim 16 wherein the cells are cells of the adipocyte lineage.